WINDOW WRAP

1. Field of the Invention

The invention relates generally to window wraps, and, more particularly, to a window wrap that may be used to finish the drywall edges around windows.

2. Background of the Invention

A window frame typically consists of side jambs and a head and bottom sill, formed in a rectangular shape. When a building is being constructed, a rough window frame is constructed, providing a space for a window through the wall. The rough frame may be constructed of a variety of materials, depending on the construction of the wall in which the window will sit, however typically the rough frame is constructed with 2x4 or 2x6 studs. Drywall may then be placed over the framing surface of the wall, and around the rough window frame opening. The drywall around the rough window frame is then either finished by forming corners with drywall panels used to form the jambs and sills of the finished frame, using any of the conventional means for finishing drywall corners, or a window wrap is constructed out of wood or other materials, to provide the finished frame and cover the unfinished edges of the drywall around the window frame.

These conventional methods of constructing a finished window frame is time consuming, and to be done properly, requires the skills of an experienced craftsman.

Drywall panels are widely used in the construction industry for forming the interior walls and ceilings of rooms. Drywall panels are made of a gypsum or reinforced gypsum core covered with paper. Drywall panels have the advantages of being easy to cut to desired sizes and to attach to assorted types of framing. However, it is very difficult to cut drywall panels so that the edges are perfectly straight and smooth and can meet to form a perfectly straight corner, which is aesthetically to be desired. In addition, when the drywall panels are cut to the desired sizes, the edges of the panels are left exposed. This exposed gypsum core is soft and tends to crumble unless the severed edges are somehow protected. This is especially important at outside wall corners.

When window frames are built of framing materials such as wood, the inside and outside corners thereby formed are seldom perfectly straight. Small variations in the sizes of the wood-framing members, warping of the wood, and inconsistent building practices lead to imperfectly straight corners where walls and window

frames meet. When drywall panels are then attached to the crooked framing materials, their intersections will also be crooked.

An assortment of devices have been used to provide a smooth and durable finish for the intersections where two pieces of drywall abut to form an inside or outside corner, such as are present in finished window frames. Among the conventional devices used are drywall tape and metal corner beads. Conventional drywall tape is provided in narrow, elongated ribbons or strips of porous paper wound into rolls. The paper is sometimes perforated to increase moisture penetration and to prevent air bubbles from being entrapped behind the tape. The drywall tape is first applied to joints and edges of abutting drywall panels and is then covered with wet plaster, sometimes called "mud". The plaster is feathered and smoothed along the edges of the tape to conceal the demarcations between the tape edges and the drywall panels to which the tape is applied. When the wet plaster has dried, the tape and drywall can be painted or otherwise covered with a suitable wall covering.

A great deal of skill is needed to apply the plaster to both sides of an inside corner such that a perfectly straight intersection is achieved. Also, to correct the crookedness resulting from the warped framing members and inconsistent building practices described above often several coats of plaster must be applied, with an entire day of drying time needed between each coat. Even then, a perfectly straight corner seldom results. It is also likely that, unless in the most highly skilled hands, the plaster trowel will mar the first side of the plaster while the second side is being applied. Once the plaster has been applied and dried, it must be sanded to an appropriate finish to provide a surface suitable for the application of paint or wallpaper.

Because drywall tape is formed of paper, it is quite flexible and will conform to various surface configurations of the edges of intersecting panels of drywall. When conventional drywall tape is used at the outside corners of walls, the flexibility of the tape often results in a corner demarcation that is irregular, since the tape conforms to irregularities in the exposed, severed edges of the drywall panels. The tape is also fragile and does not stand up well to the constant physical abuse suffered by outside corners. As a consequence, conventional drywall tape cannot be used at exposed outside corners.

To finish outside corners in building construction, therefore, metal corner beads are often used. Conventional metal beads are configured in an L-shaped or angle-shaped cross section and are typically fabricated from elongated perforated strips of metal, such as galvanized steel, permanently deformed with a lengthwise 90-degree bend to form elongated angles. The metal beading is typically positioned at the intersections of adjacent drywall panels that meet at right angles to form an outside corner within a room. The sections of metal beading are nailed in place through the drywall panels to wooden supporting structural members located behind the drywall panels. Wet plaster is then smoothed into place to cover the metal flanges or leg members of the metal beading, and the edges of the plaster are smoothed and feathered to attempt to conceal the metal edges.

While the rigidity of the metal beading does allow an outside corner of an inside building wall to be finished with a sharp, straight edge, which is aesthetically pleasing, the use of metal beading involves some significant problems. Over time, the metal corner bead will rust, thereby producing rust stains that are clearly visible on the surfaces of the walls at the corner. It is not always possible to completely cover the edges of the metal flanges or the nail heads used to attach the metal corner bead to the drywall panel, detracting from the desired smooth appearance of the wall. Cracks often develop in the overlying plaster at the outer edges of the flanges. To prevent this from happening, often two or three coats of plaster are applied, with prior coats allowed to dry and harden, which may take as long as 24 hours, before a subsequent coat is applied. When the corners are crooked or jagged due to problems with the underlying framing, metal beads do not cover enough surface area or have enough flexibility to correct the inequalities that exist. Another problem is inherent in the fact that the malleable metal from which the metal beads are made has a very poor memory and is subject to being dented or wrinkled, after which it is difficult to straighten it to produce a smooth finish. Because of the rough handling to which most of the material at a work site is subjected, it is not uncommon for the strips to be wrinkled, dented, and perhaps twisted, thus rendering them either unusable, or usable only to produce an inferior end result. In addition, the metal strips are used in large quantities in construction and can add up to considerable cost.

Furthermore, when drywall corners are used to finish the window frame, the resulting frame is not very insulated. This type of frame is also not very strong and

cracks often times develop at the corners of the window frame. Outside air leakage will then also occur.

If a conventional window wrap is used, the resulting frame is stronger and may be more insulated, however, its use requires extra time, material and expense to install. Such conventional window wraps are also prone to outside air leakage.

Therefore, a need exists for a window wrap that protects the edges of the drywall used around the window, provides perfectly straight corners for the finished window frame, is strong, insulated, eliminates outside air leakage around the window frame, and is easy and economical to use.

None of the described conventional ways of finishing a window frame fulfills these needs.

The window wrap described herein is able to fulfill all these before described needs. The window wrap has perfectly formed corners and may be used for any depth jamb/sill. The window wrap covers and protects the exposed edges of drywall around the inside edge of he window frame, and is adjustable to fit various thicknesses of drywall panels. The window wrap may be insulated and may be sealed to prevent outside air leaks. Finally, the window wrap may be economically manufactured due to its simplified cross-sectional shape.

SUMMARY OF THE INVENTION

A window wrap used to accommodate and protect various thicknesses of drywall around a rough window frame, which forms a window frame with perfectly square corners. The window wrap has a jamb/sill extension and a wall extension, each extending perpendicular to each other. The wall extension has a front surface, a rear surface, and a distal surface extending between the front and rear surfaces, and is adjustable to fit various thicknesses of drywall panel. A layer of primer or adhesive laminate is applied to the front surface of each extension so that paint can bond to the front surface. The jamb/sill extension of the window wrap may also be made similar to the wall extension and used to form any depth of jamb/sill.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention can be more readily understood in conjunction with the accompanying drawings, in which:

Fig. 1 is a partial perspective view of one embodiment of the component used to form each portion of the window wrap in accordance with the present invention;

FIG. 1a is a partial perspective view an alternative embodiment of the component used to form each portion of the window wrap in accordance with the present invention;

FIG. 1b is a partial perspective view an another alternative embodiment of the component used to form each portion of the window wrap in accordance with the present invention;

FIG. 2 shows a cross-sectional view of the preferred component used to form each portion of the window wrap in accordance with the present invention;

FIG. 3 is a detailed cross-sectional view taken from the outlined section of FIG. 2 showing the front surface of the drywall corner finishing device used to form each portion of the window wrap in accordance with the present invention covered with a layer of primer;

FIG. 4 shows a detailed cross-sectional view taken from the outlined section of FIG. 2 showing the front surface of the drywall corner finishing device used to form each portion of the window wrap in accordance with the present invention covered with a layer of adhesive laminate;

FIG. 5 shows a cross-sectional view of the drywall corner finishing device used to form each portion of the window wrap in accordance with the present invention bent 90° to form an outside corner.

FIG. 6 is a detailed cross-sectional view of the center joint of the drywall corner finishing device as shown in FIG. 2, showing an embodiment of the device with a tapered joint;

FIG. 7 is a partial perspective view of two drywall corner finishing devices each bent to form outside corners, with their ends cut at an angle to form a 90°mitered-joint when placed together.

FIG. 8 shows a front perspective view of four drywall corner finishing devices, each bent to form outside corners, and their ends cut at an angle to form a 90°miter-joint with each other, and joined together to form the window wrap of the present invention.

FIG. 9 shows a rear perspective view of the window wrap shown in FIG 8.

FIG. 9a shows a rear perspective view of an alternative embodiment of the window wrap.

FIG. 10 is a front view of the window wrap of the present invention.

FIG. 11 is a rear view of the window wrap of the present invention.

FIG. 12 is a side view of the window wrap of the present invention.

FIG. 13 is a cross-sectional view of the wall or jamb/sill extension showing its use with a drywall panel with the application of plaster between the drywall panel and the extension.

FIG. 14(a), 14(b) and 14(c) are partial cross sections of the wall or jamb/sill extension illustrating the use of the extension with a ½" thick drywall panel.

FIG. 15(a) and 15(b) are partial cross sections of the wall or jamb/sill extension illustrating the use of the device with a 5/8" thick drywall panel.

FIG. 16 is a further partial cross-section of the wall or jamb/sill extension illustrating the use of the device with a 5/8" thick drywall panel and a block as affixed to a framing structure.

DETAILED DESCRIPTION

Drywall panels are conventionally supplied in predetermined widths, for example 3/8 inch, ½ inch, and 5/8 inch widths, etc., and not meant to be inclusive. The window wrap of the present invention is able to conform to any width of drywall panel used.

The window wrap of the present invention is preferably fabricated using drywall corner finishing device components which are the subject of a previous but co-pending patent application, Application number 09/888,011. Therefore, the drywall corner finishing device components will be described first, followed by a description of the window wrap constructed using the drywall corner finishing device components.

Turning to FIGS. 1 and 1a, the left 102 and right 104 wings of the drywall corner finishing device component are attached to a flexible center joint 100 and extend outwardly therefrom to a distal edge 110. In FIG. 1a, the wings 102, 104 have a front surface 106 and a rear surface 108. The front surface 106 and rear surface 108 extend outwardly beyond the outer strut 110 of the wings 102, 104. When the drywall corner finishing device covers either an inside corner or an outside corner, the rear surface 108 of the device is juxtaposed to the framing of an interior wall while the front surface 106 faces out into the room, contiguous with the surface of the drywall panels forming the wall. In the embodiment shown in FIG. 1, wing 104 only has a front surface 106. The front surface 106 may be covered with a layer of primer 300 as shown in FIG. 3 so that any paint or wall covering that is eventually

used to decorate the wall will adhere easily. Alternatively, the front surface 106 may have an adhesive laminate 400 attached to it as shown in
FIG. 4.

In the preferred embodiment of the drywall corner finishing device, a laminate 400 is used on the front surface 106. For best results the laminate should have extensible or flexible properties to it so that the laminate does not crack when the device is bent at the flexible joint, but otherwise have surface characteristics as similar to those of drywall panels. Through extensive testing, best results were had using a paper laminate manufactured by Fibermark of Fitchburg, Massachusetts, and sold under product number X41693. It is understood that disclosure of this particular laminate does not limit the invention to use of only this laminate nor exclude the use of other laminates which are also suitable for use with the device.

In the preferred embodiment, the paper laminate is affixed to the device by a pressure sensitive adhesive, which remains pliable after application and during normal operating conditions of the device. Through extensive testing, best results were had using an adhesive manufactured by Worthern Industries of Nashua, New Hampshire, and sold under product number Nylco E-68. This adhesive provides a fusion level bond between the device and the laminate, which greatly reduces the tendency of the laminate to separate from the device. Other suitable adhesives include those which do not harden nor negate the extensible properties of the applied paper laminate.

The device itself may be extruded using various materials. In the preferred embodiment of the invention, a PVC plastic is used, manufactured by Veka, Inc. of Fombell, Pennsylvania, and sold under product number X-15.
It is understood that disclosure of this particular material does not limit the invention to use of only this material nor exclude the use of other materials which are also suitable for use with the device.

The structure of the drywall corner finishing device component is more clearly seen in FIG. 2. The flexible center joint 100 preferably extends from the front surface of each wing to the other and is either tapered or has parallel walls, but it is to be expressly understood that any joint shape, such as actuate, V-shaped, U-shaped, C-shaped, etc. can be used that allows the device to bend through a variety of angles at the center joint 100. The center joint 100 extends along an axis that extends linearly to form a corner or edge.

The tapered joint 101 embodiment of the flexible joint has a front surface which extends parallel to the front surface 106 of the device. The rear surface of the tapered joint 101 tapers inwardly from the two wings, toward the front surface. This allows for a sharp, clean corner to form along the front surface of the tapered joint 101 here it is the thinnest, when the device is bent along the joint, as can be more clearly seen in FIG. 6.

The tapered joint 101 embodiment of the flexible joint may be used to form both inside and outside corners.

A number of struts 206 separate the rear surface 108 of each wing 102, 104 from the front surface 106 of each wing 102, 104. In the embodiments shown in FIGS. 1a, 1b and 2, the pattern of struts 206 provides stability to the structure of the corner device and also allows the device to be folded around outside corners, as discussed in more detail below. It will be obvious to one skilled in the art that the pattern of struts 206 shown in FIGS. 1 and 2 is not the only pattern that will provide these features of stability and folding and that other patterns would be suitable and are to be included in the present invention.

The edge 202 of the rear surface 108 extends beyond the edge 200 of the front surface 106. The outer portion 204 of the front surface 106 tapers slightly toward the rear surface 108 so that, as discussed in more detail below, the edge of a drywall panel can be placed in the space 114 between the front surface 106 and the rear surface 108 such that the edge 202 of the rear surface 108 and the edge 200 of the front surface 106 are in close opposition to the drywall panel.

A flexible flange joint 113 is located at the intersection of the rear surface 108 and the outer edge 110. The rear surface 108 may then be bent at the flexible flange joint 113 thereby allowing the rear surface flange 112 to pivot about the flexible flange joint 113 to adjust the space 114 between the front surface 106 and rear surface 108 to fit various thickness drywall panels.

It is to be understood that types of flexible flange joints 113 other than that illustrated in FIGS. 1 - 13 can be used in the present invention and that the present invention includes all types and designs of joints that provide the above-described bending and pivoting.

In the preferred embodiment of the device, the front surface 106 and the rear surface 108 taper slightly towards each other, as they extend towards the distal ends of each wing 102, 104. This tapering of the wings 102, 104 helps to facilitate a

smooth transition from the surfaces of the device and the surfaces of the inserted drywall panels.

FIG. 5 illustrates the drywall corner finishing device bent at the center joint 100, at a 90°angle, as shown by arrow 500, to form an outside corner. Four drywall corner finishing devices are needed, each formed in a 90° outside corner, to be used as the jamb and sill portions of the window wrap. The four portions of the window wrap consist of two side jamb portions, a head sill portion, and a bottom sill portion.

As FIG. 7 shows, the ends of each portion are cut at an angle to form a 90°mitered-joint between the ends of each joined portion. In this configuration, the wings of the drywall corner finishing device now form a wall extension 302 and a jamb/sill extension 304.

FIGS. 8-12 show the four jamb/sill portions assembled together to form the window wrap. The portions are joined at each miter-joint 306. While the jamb sill portions may be joined together in any fashion, the preferred connection is with a mitered-joint. The mitered-joint may be fastened together by a fastener or adhesive. However, the preferred means of joining each miter-jointed end is to fuse or weld each end to each other. By doing this, an air and water tight seal is formed between each adjacent portion. The wall extensions 302 of each portion all extend outwardly from the center joint and lie in the same plane. The jamb/sill extensions 304 of each portion now all extend rearward from the center joint, each extension perpendicular to the adjacent extension.

Thus, the above-described window wrap may be manufactured to accommodate any size window frame simply by varying the lengths of jamb portions and sill portions joined together. The jamb/sill extensions may also be varied to accommodate any desired jamb/sill depth. If the desired jamb/sill depth is shallower than the length of the jamb/sill extension, the extension may be cut to the proper depth. However, if the desired jamb/sill depth is deeper than the length of the jamb/sill extension, a piece of drywall may be inserted into jamb/sill extension to provide the desired depth.

The window wrap may then be inserted, as a unit, directly into the rough window frame. It is preferred that an adhesive be used between the rear surface 202 of the wall extensions 302 and the rough frame. However, a trim channel or caulk my also be used between the window wrap and the rough window frame. The use of adhesive allows for settlement of the window wrap, reduces the chance of

cracking at the corners of the window wrap, and provides an almost airtight seal between the window wrap and the frame. The drywall panels on the framing wall around the window frame may then be inserted into the space 114 of the wall extension 302 of the window wrap.

As an example, in FIG. 13, the extension of the window wrap is attached to the wall framing 800 by use of nails 806. The window wrap preferably is made of plastic soft enough to permit the nails 806 to be driven through the flange 112 of the rear surface 108 without the need for pre-formed holes. It is to be expressly understood that other methods such as the use of screws, bolts, adhesive, etc. will be equally efficacious in attaching the window wrap to the supporting members of the framing. The attachment location of the window wrap and the positions of the nails 806 can be varied to enable the window wrap to correct inequalities that may exist within the framing and from one framing member 800 to the next. If necessary, shims may be placed behind the window wrap before it is attached by nails 806 or affixed by an adhesive. The edges of the drywall panels 804 are inserted into the spaces 114 between the front surface 106 and rear surface 108, such that the edges of the drywall panels 804 abut the outer strut 110 of the wings 102, 104. It can be seen in FIG. 13 that the spaces 114 between the front surface 106 and rear surface 108 are just large enough to accommodate the drywall panels 804 and that the front surface 106 and rear surface 108 are closely juxtaposed to the drywall panels 804. The drywall panels 804 thus hide the nails 806. The drywall panels 804 are attached to the framing 800 in the usual fashion.

As FIG. 13 shows, plaster 1300 is then applied to the tapered distal portion 204 of the front surface 106 and the tapered edge of the drywall panel 804 to hide the edge 200 and provide a smooth, level surface. Because plaster 1300 is applied only to the tapered portion 204 of the finishing device, difficulties inherent in plastering within corners are avoided. Such difficulties include, among others, the difficulty in maneuvering a plaster trowel within a corner, the skill need to produce a perfectly straight edge where the two sides of the corner meet, and the need for several layers of plaster 1300 to completely hide the joint between the window wrap and the drywall or to correct the inequalities resulting from mis-sized, mis-placed, or warped framing members, with each layer requiring considerable time to dry. Once plaster 1300 has been applied, the surface of the wall or sill/jamb can be finished by painting, wallpapering, or any other method desired. The primer 300 bonded to the

front surface 106 enables paint or other wall coverings to adhere to the front surface 106 of the finishing device. In another embodiment, a laminate 400 can be adhesively affixed to the front surface 106 to provide a surface for subsequent painting.

Plaster alternatives may also be used to hide the edge 200. Plaster alternatives include, but are not limited to stucco, stucco plasters, synthetic stucco and cement siding products.

Alternatively, the window wrap may be installed without applying plaster between the edges of the window wrap and the drywall, to hide the window wrap edges. The window wrap may then be painted or covered in any way desired, providing a visual border around the border. Another alternative is to hide the window wrap by placing molding over the edges of the window wrap and drywall.

FIG. 14(*a*) illustrates the wall or jamb/sill extension in a resting position. When ½" drywall panel 1500 is inserted into space 114 between the edges 200, 202 as shown in FIG. 14(*b*), the drywall panel 1500 is held against the rear surface flange by edge 200 as shown in FIG. 14(*c*).

FIG. 15(*a*) illustrates 5/8" drywall panel 1600 inserted into space 114 between the edges 200, 202. With the greater thickness drywall panel 1600, rear surface flange 112 pivots at flexible flange joint 113, away from the front surface 106. Front surface 106 remains relatively straight due to outer strut 110, which extends from the front surface 106 of the extension away from the end of each wing, to the rear surface. Another consideration which helps to allow the front surface 106 to remain relatively straight while the rear surface flange 112 pivots, is that the wall thickness of the rear surface 108 is slightly thinner than that of the front surface 106. This effect could also be facilitated in other ways such as reducing the wall thickness of the rear surface 108 where it intersects the outer strut 110 at the flexible flange joint 113, thereby weakening the immediate area, allowing the flange joint 113 to pivot more easily.

FIG. 15(*b*) illustrates rear surface flange 112 held in place adjacent drywall panel 1600 once the extension and drywall panel 1600 are installed, as further shown in FIG. 16.

Best results when using the device were found when an adhesive was used to affix the inside surface of space 114 of an extension with the drywall. Preferably a fusion bond adhesive is used. Two adhesives which were found to be suitable for

this application are product number PL Premium manufactured by OSI Sealants of Mentor, Ohio and product number F2100 in combination with product number F2100A, manufactured by ITW Foam Seal of Oxford, Michigan. It is understood that disclosure of these particular adhesives does not limit the invention to use of only these adhesives nor exclude the use of other adhesives which are also suitable for use with the device.

FIG. 16 illustrates how the extension of the window wrap is installed with a 5/8" panel 1600. A block 1700 may be used to keep the device and the drywall panel 1600 parallel with the framing surface which the drywall panel 1600 is attached. The block 1700 is affixed to the rear surface 108 of the extension. The window wrap and drywall panel 1600 are affixed to the framing surface by nails 1702 or some other fastening device. When the nails 1702 are fastened into the framing surface, the rear surface flange 112 is sandwiched between and adjacent to the framing surface and the drywall panel 1600. Thus, this window wrap can be used for drywall panels that are thicker than the thickness of the device.

The window wrap of the present invention may be modified in several ways. First, the window wrap may be constructed of a solid material or a material other than plastic. Second, the drywall corner finishing device component may be extruded with a 90° bend at the center between the two wings, the joint between the two being rigid. While this would save the step of bending the device between the extrusion and the angled-cut steps, it is easier to store and transport the device, before the jamb/sill portions are connected together when the device is flat. Third, if added insulation in the window wrap is desired, insulation may be placed between the struts before each portion is joined together. Fourth, each of the outer portions of front and rear surfaces of each extension, which are adjacent the outer edges, and are free of reinforcing structure, may be excluded. Fifth, each of the jamb and sill portions may be connected together other than by a mitered joint or other than by fusing or welding the portions together. Sixth, each of the wall or jamb/sill extensions may be constructing using only a single surface. Lastly, the jamb and sill portions may be connected together at angles other than 90° to each other, allowing for use with different shaped window frames.